

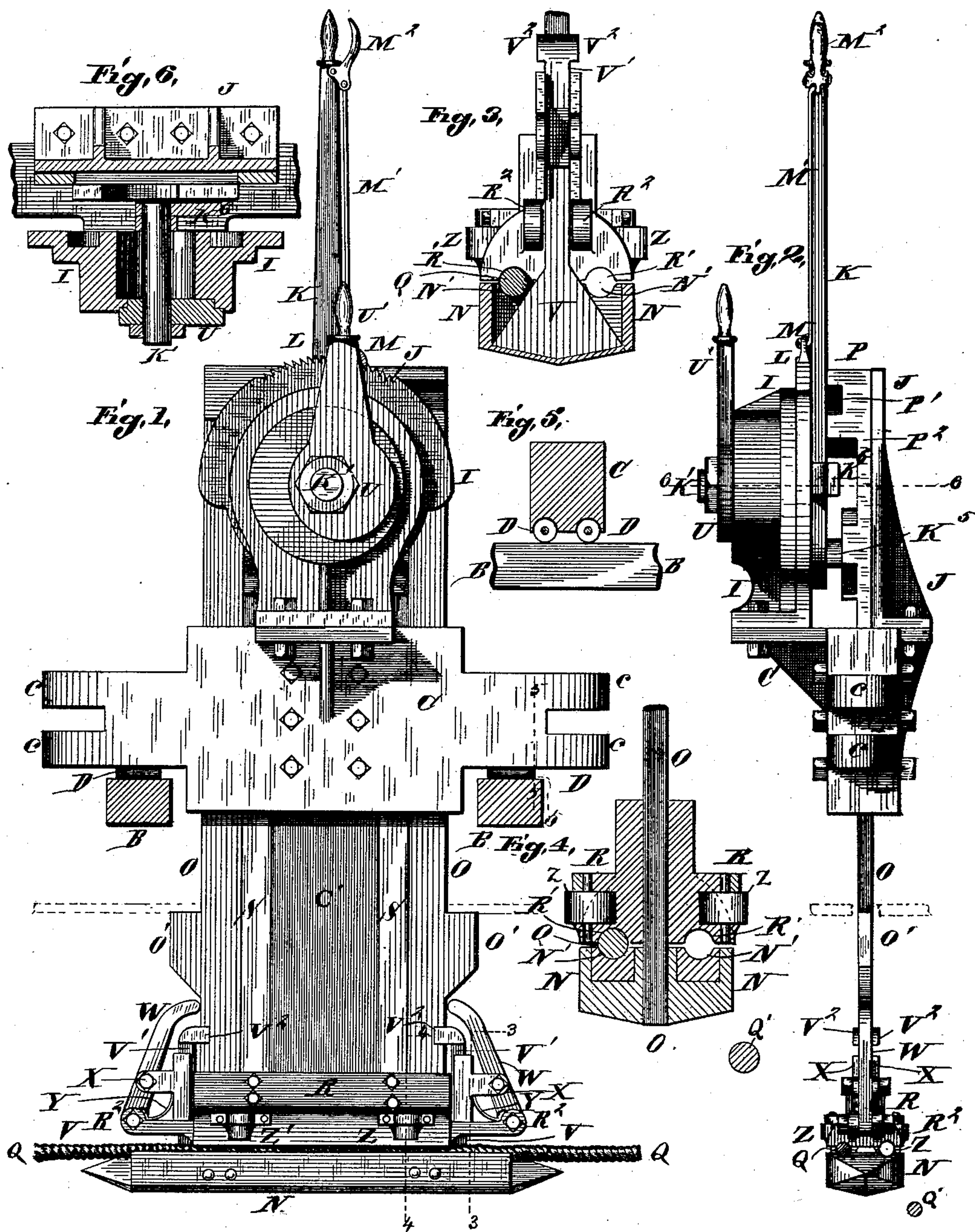
(No Model.)

4 Sheets—Sheet 1.

R. P. WALSH.
CABLE GRIP.

No. 360,744.

Patented Apr. 5, 1887.



Witnesses

H. B. Knight

Edmund Steen

Inventor

Richard P. Walsh.

By *his* Attorneys

Knight Bros.

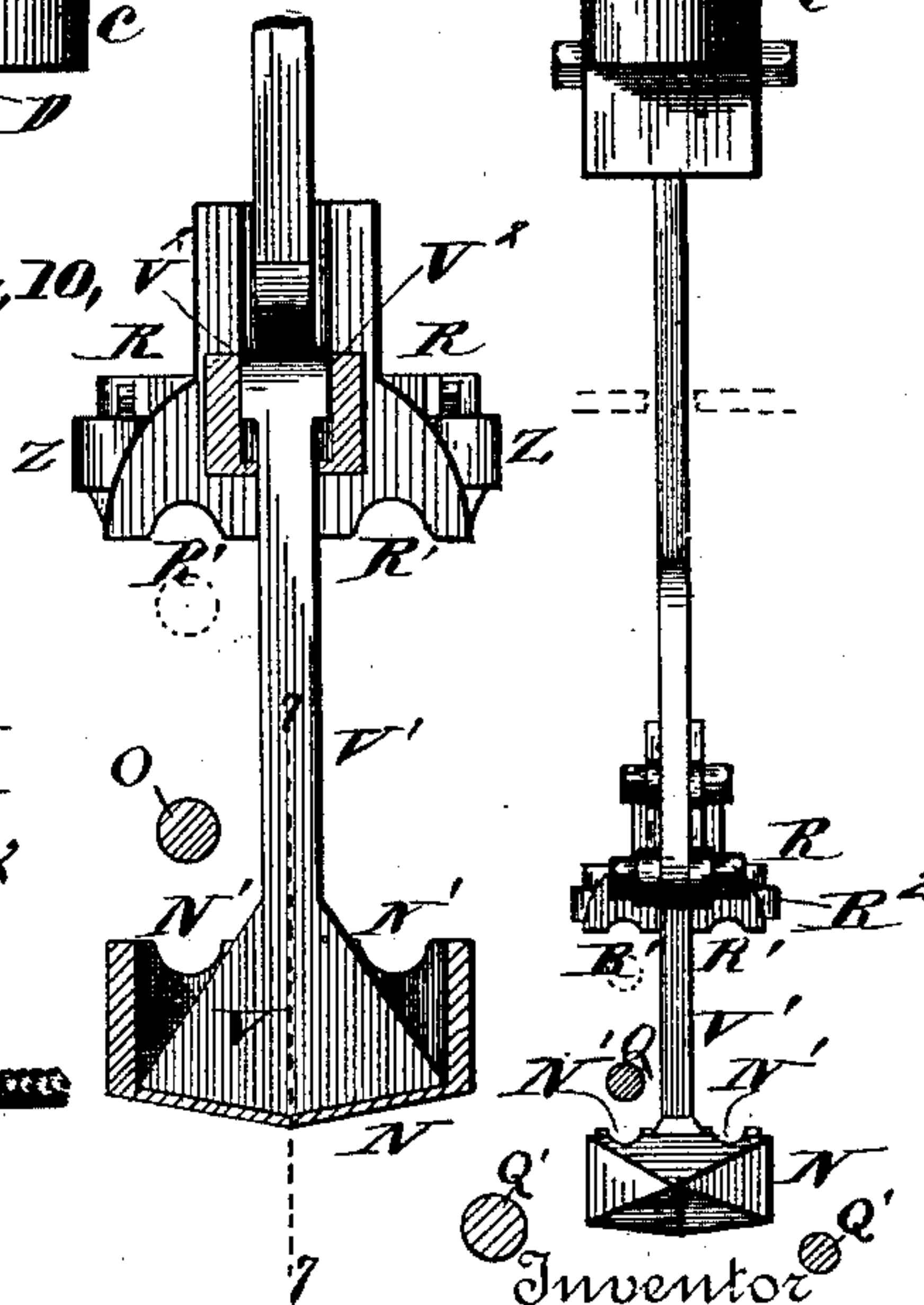
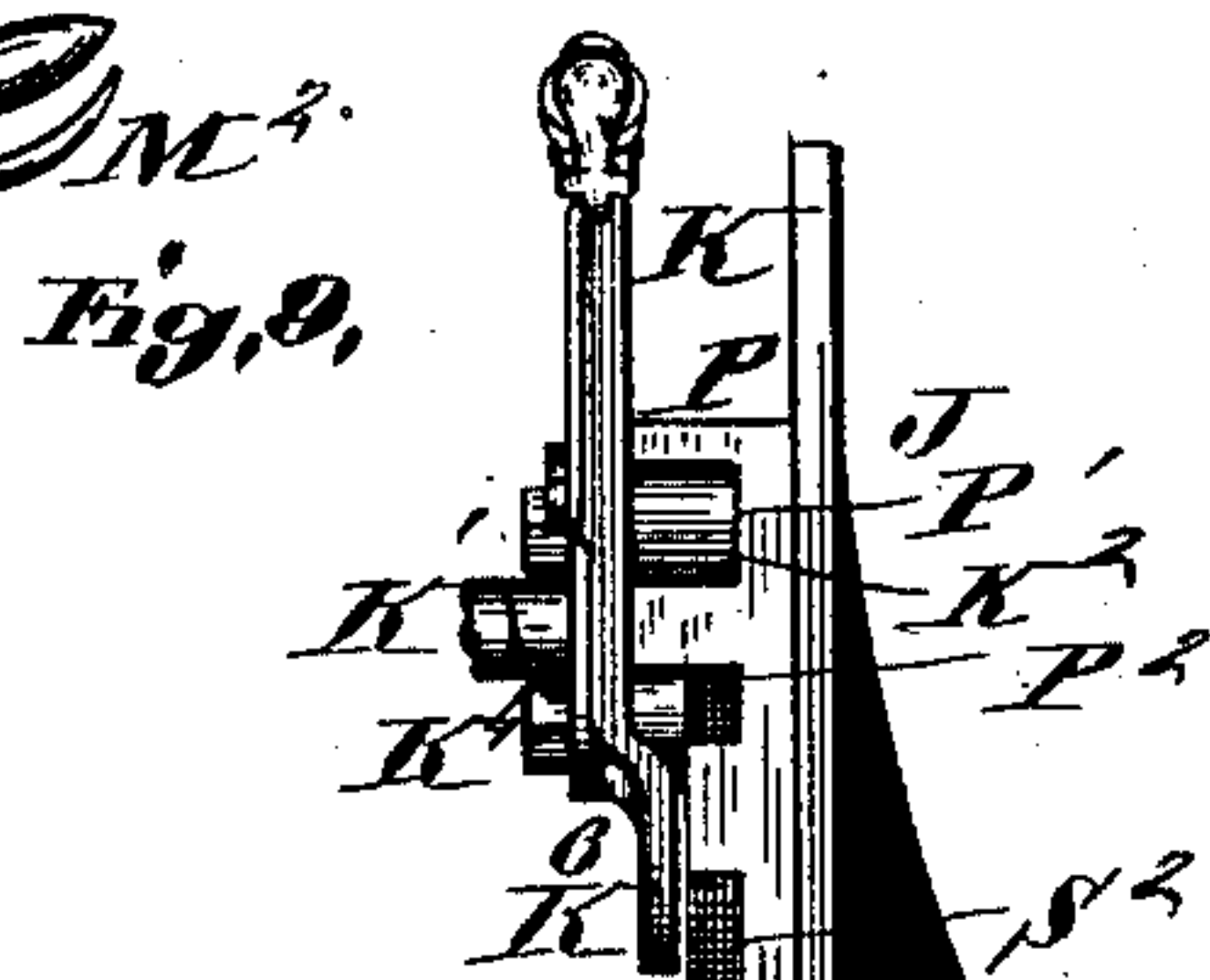
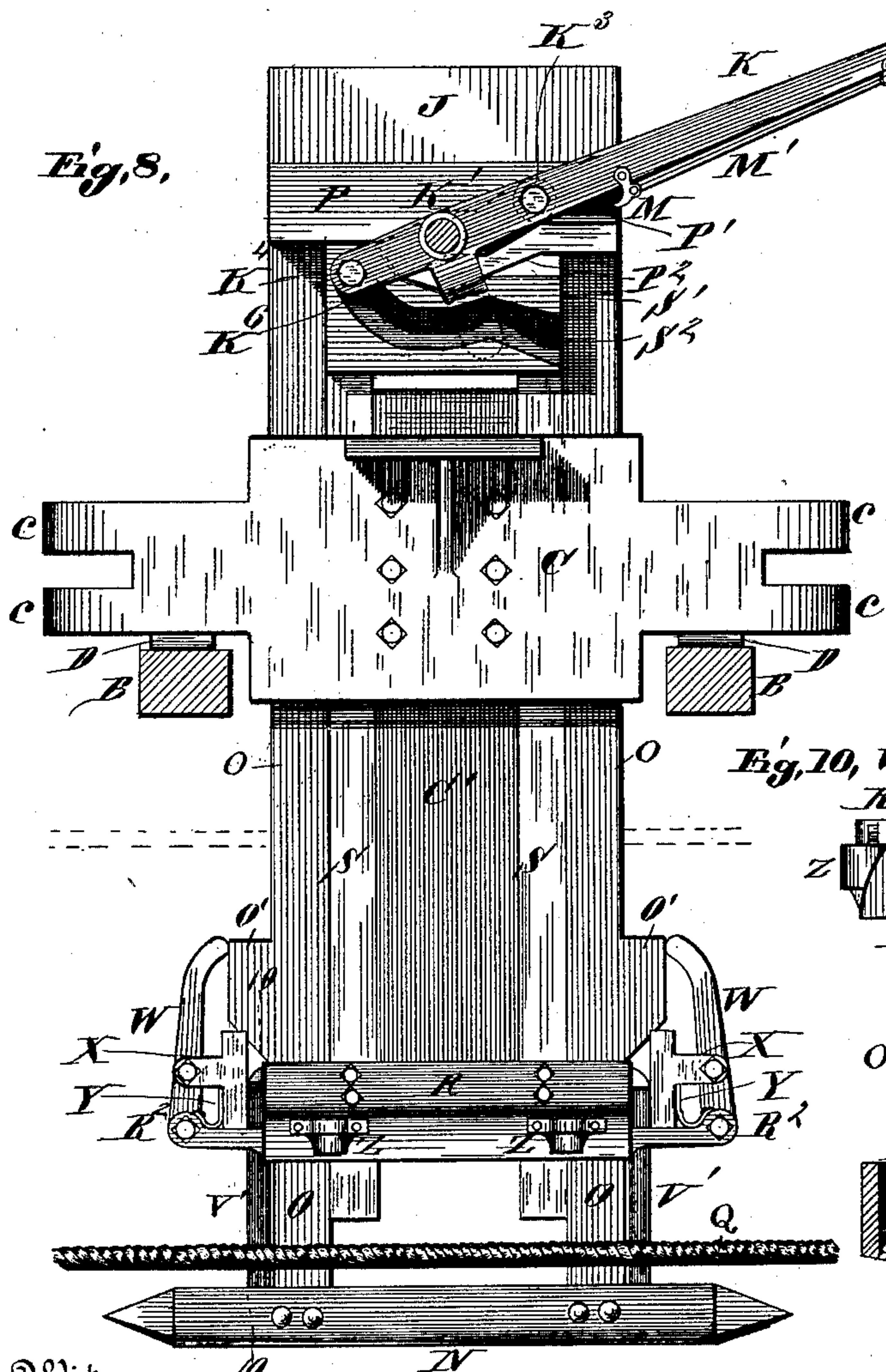
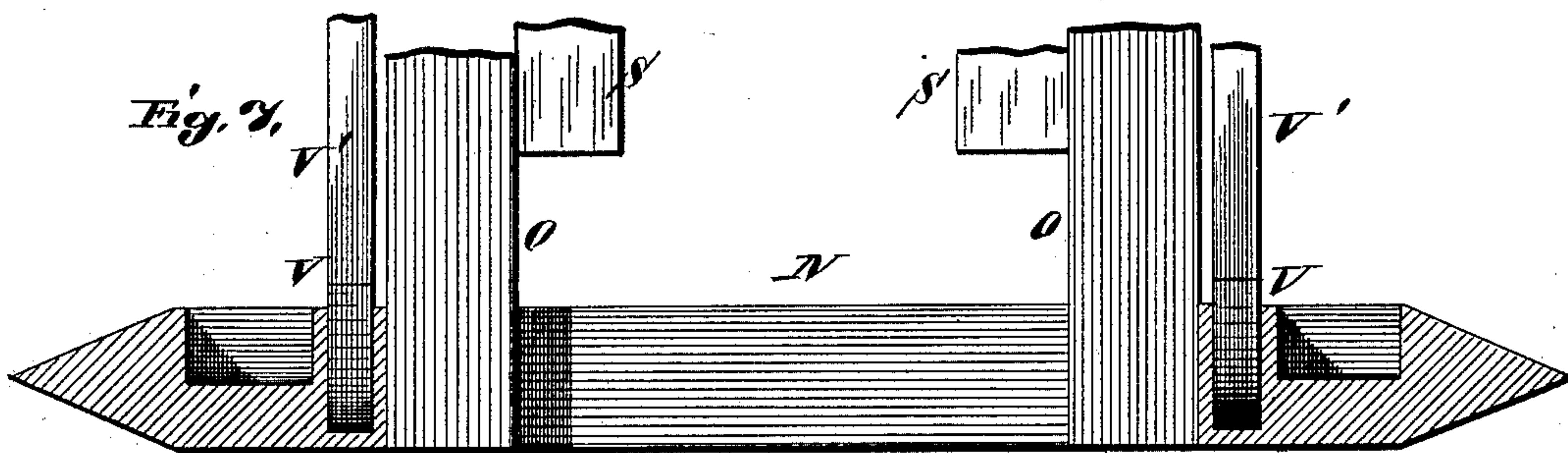
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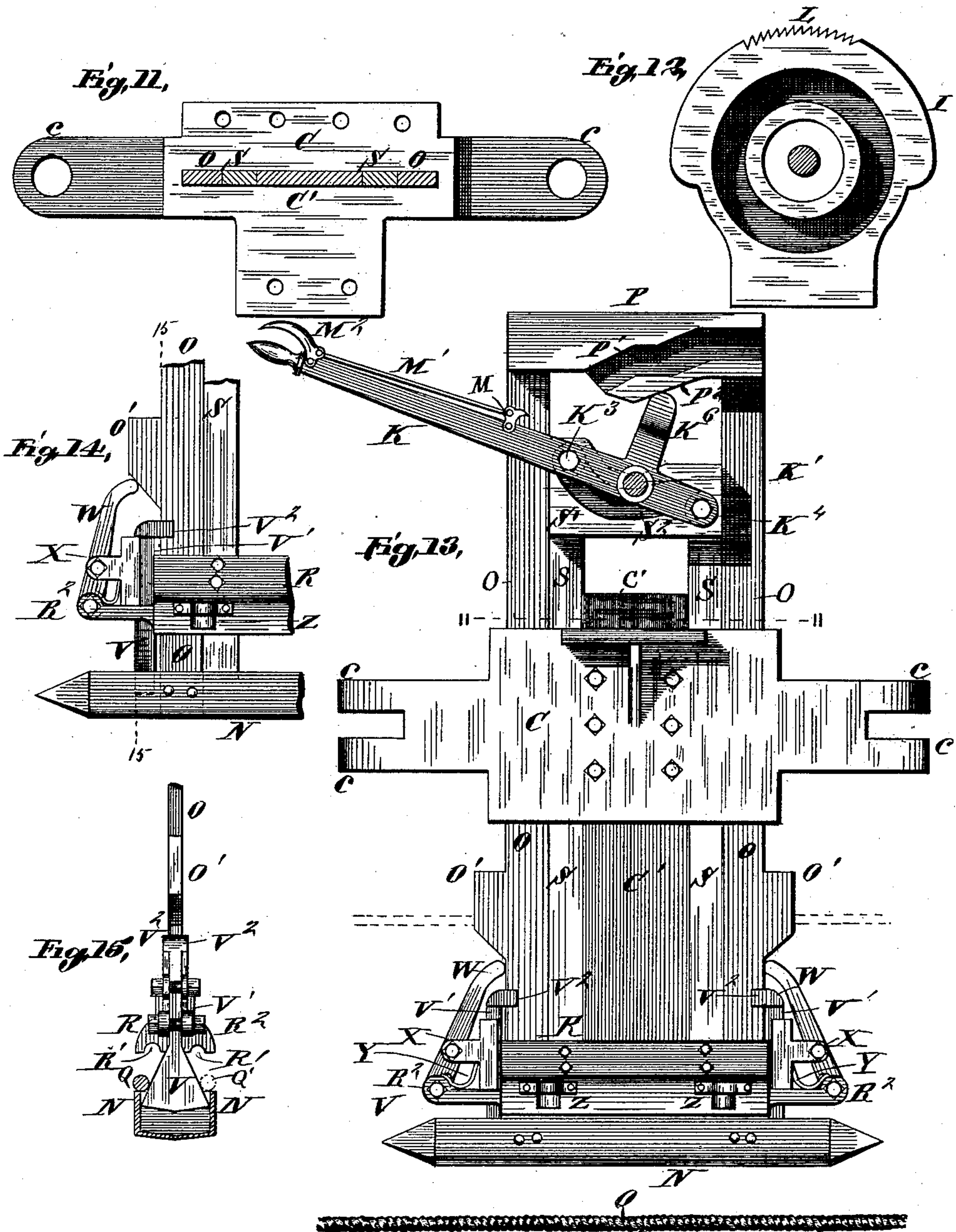
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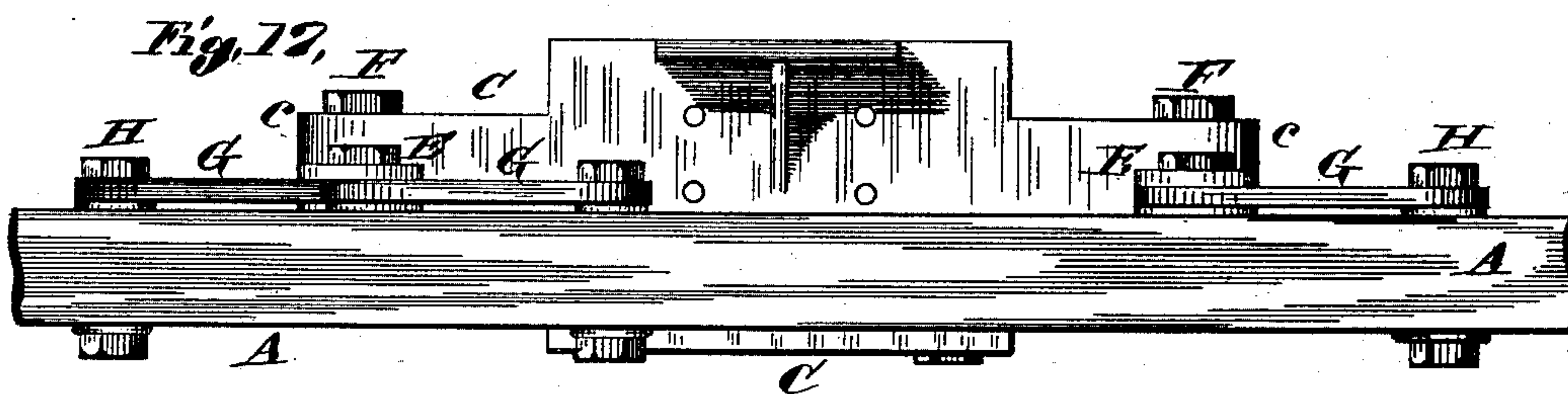
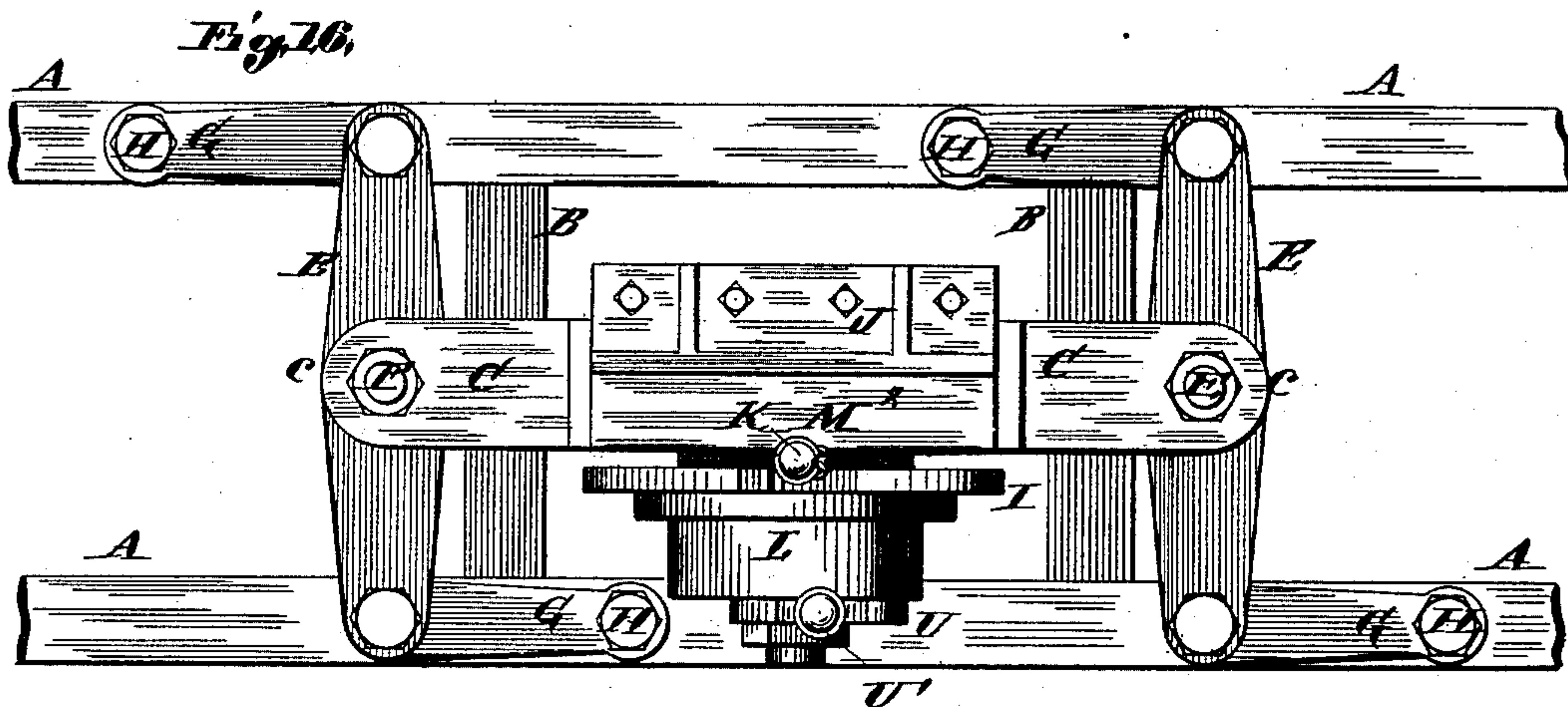
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UNITED STATES PATENT OFFICE.

RICHARD P. WALSH, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-FOURTH
TO MIDDLETON D. DEGGE, OF SAME PLACE.

CABLE-GRIP.

SPECIFICATION forming part of Letters Patent No. 360,744, dated April 5, 1887.

Application filed October 7, 1886. Serial No. 215,592. (No model.)

To all whom it may concern:

Be it known that I, RICHARD P. WALSH, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Cable-Grips, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

10 Figure 1 is a side view of the device with the cable gripped. Fig. 2 is an end view of the device. Fig. 3 is an enlarged vertical section at 3 3, Fig. 1. Fig. 4 is an enlarged vertical section at 4 4, Fig. 1. Fig. 5 is a vertical section at 5 5, Fig. 1. Fig. 6 is a horizontal section at 6 6, Fig. 2. Fig. 7 is an enlarged vertical section at 7 7, Fig. 10. Fig. 8 is a side view showing the cable ungripped, with the bracket off. Fig. 9 is an end view showing the cable ungripped, with the bracket off. Fig. 10 is an enlarged cross-section at 10 10, Fig. 8. Fig. 11 is a section on the line 11 11, Fig. 13. Fig. 12 is a rear elevation of the bracket. Fig. 13 is a side elevation of the device, showing the grip at its highest position. Fig. 14 is a detail side elevation showing the shoe descending. Fig. 15 is a section at 15 15, Fig. 14. Fig. 16 is a plan of the device, showing the connection between the cable-gripping device and the car-body. Fig. 17 is a side elevation of this device.

A A, Figs. 16 and 17, are longitudinal timbers of the car-body, and B B are transverse timbers of the same, the latter being shown in 35 Figs. 1 and 5.

C is the body of the gripping device.

D D are small wheels or rollers, having bearing on the cross timbers or rails B.

C' is a tongue or stem depending from the 40 body.

E E are cross-bars, pivoted at the middle by bolts or pintles F to the lugs *c* at the ends of the body.

G G are radius-rods, by which the ends of the bars E are connected to the timbers A. One of the radius-rods in each case extends forward and the other backward to a stud, H, fixed in the timber A. (See Figs. 16 and 17.)

It will be understood that the body C will 50 have free transverse or side movement, but

will be wholly restrained from endwise movement.

To the body C are bolted a bracket, I, and an abutment, J. The hand-lever K is fulcrumed at K' to the bracket. The bracket has at top a ratchet-rack, L, concentric with the fulcrum, or nearly so. 55

M is a dog upon the hand-lever, which engages the ratchet-teeth L to hold the lever in a position to cause the gripping of the cable. 60 This dog is released by the usual rod, M', and lever M'.

N is the shoe attached to supporting-bars O, which slide vertically in the body C of the grip. The bars O are connected at top by a head, P, having a cam-groove, P', which, in ordinary positions of the lever, rests on the anti-friction wheel K² of a stud, K³, projecting from the side of the hand-lever K. The anti-friction wheel is not essential. The lower 70 cable-gripping jaws, N', are upon the shoe N.

R is the block having the upper gripping-jaws, R'. This block is attached to supporting-bars S, which slide vertically in the body C. The bars S are connected at top by a head, S', which has a cam-groove, S², in which works the stud K⁴, preferably armed with an anti-friction wheel, K⁵. The construction of the cam-bearings is such that at ordinary times the movement of the hand-lever K causes the 80 gripping-jaws to approach or recede from each other. The lower jaws, however, have more movement than the upper, because the cable descends when ungripped. When, however, the lever is turned into the position shown 85 in Fig. 13, an arm, K⁶, of the lever comes against the bearing-face P² and lifts the shoe entirely above the cable, as shown, so that at such time both the shoe N and block R are at a higher elevation than the cable. The heads 90 P and S' have bearing at one side against the abutment J. The fulcrum-pin K' is firmly fixed in the hand-lever, so as to turn therewith, and has bearing in an eccentric, U, turning in a bearing in the bracket I. The eccentric has 95 an arm, U', by which it may be turned to move the fulcrum-pin vertically. Now, it will be seen that if the fulcrum-pin is raised when the cable is gripped, the cable with the shoe N and block R will be all raised together. This 100

gives means for adjusting the position of the grip to the cable at the terminus of the line, where two cables, Q, are provided, as shown in the device, (see Fig. 15, where one of the cables is shown in cross-section and the other is indicated by a dotted circle,) as it is not intended that the two cables should be gripped at the same time. The same may be used to lift the shoe above the cable of an intersecting line when the latter cable is beneath. Thus means is provided for lifting the cable Q. If, however, the latter cable is above the other, the hand-lever K is thrown into the position shown in Fig. 13, when the cable is discharged from the grip-jaws and the shoe thrown up, as set forth.

I will now describe the mechanism for discharging the cable from the grip-jaws.

V V are wedge-shaped bars, having each a stem, V', with jaws V², which embrace the edge of the bar O, so that the bar forms a guide for the stem. These jaws extend beyond the side of the stem, so as to form shoulders.

R² R² are brackets extending from the ends of the grip-block R, the stems V' working through the brackets. W is a lever, of which one is fulcrumed in each bracket, and which is connected to a block, X. The block is fitted to embrace the stem of the wedge beneath the shoulders or jaws V². The wedge drops to the bottom of the shoe N, and is sustained by the shoe when the parts are in the position shown in Figs. 1 and 13. When, however, the shoe N separates from the block R, the shoulders or jaws V² rest upon the block X, and on the continued descent of the shoe the wedges push the cable or cables, as the case may be, out of the jaw or jaws N'. As the shoe continues to separate from the block R, the upper ends of the levers W are forced outward by the inclines O' upon the bars O, and the blocks X are by this means drawn from beneath the shoulders V² and the wedges allowed to drop. The cable is now out of the jaw N, and to again engage it the shoe must be dropped down below the level of the cable. As the shoe descends, its inclined bottom pushes the cable aside until the cable reaches the top of the shoe, when the tension upon the cable draws it onto the jaw N. As the shoe is raised, the wedges are raised with it, and as soon as the bottom jaws or shoulders, V², reach the top of the block X, the block moves inward beneath the shoulders. The blocks are forced inward by means of springs Y, which are secured to the brackets R² and rest against the blocks.

Z are side-bearing wheels upon the block R, which may run against proper rails at the curves.

The ends of the shoe N are pointed or tapering, to guide the shoe past cable-rollers or other objects.

The purpose of making provision for two cables is not to work two cables at the same time; but it is designed, nevertheless, to have

a reserve cable, Q', in the conduit, so that in case of accident it can be used in place of the other. The reserve cable Q', which is not in use, will be without tension and will not be drawn to the grips, while that one, Q, which is in use will be drawn to the position for gripping.

In going around a curve it is preferred that the cable should be gripped by the jaws which are next to the interior side of the curve, as there would not be so much side strain on the gripping device, and it would not be forced so hard upon the guide-rollers at the side of the conduit. Supposing it is desired to transfer the cable from one pair of jaws to the other, (for this purpose,) the gripman on reaching the curve throws the hand-lever K into the position shown in Fig. 13, which drops the cable, and then quickly the lever is reversed into the position shown in Fig. 8, and then the lever is lifted up into gripping position. The first movement discharges the cable from the gripping-jaws, the second engages the cable in the other pair of jaws, (because the cable is drawn to the inner side of the curve,) and the third movement grips the cable fast.

Supposing the working-cable Q to be broken and the tension to be applied to the other cable, Q', the tension carries the latter to the grip, and, on the lever having imparted to it the motion above described, the disabled cable will be discharged and the other cable taken up and gripped.

I am aware that it has been proposed to provide the grip-shank with rollers for engaging a guide-rail within the conduit, and do not claim such as my invention.

I am aware of Patent No. 345,254, granted on the 13th of July, 1886, to N. Abbott, and also of Patent No. 350,028, granted on the 28th of September, 1886, to L. B. White, and do not claim as my invention anything shown in either.

I claim as my invention—

1. The combination of the shoe N with bar O, with projection O', wedge V, with stem V' and jaws V², block R, bracket R², lever W, and block X, substantially as and for the purpose set forth.
2. The combination of the shoe N with grip-jaw N', lifting-bars O, with cam-bearing P', block R, with grip-jaw R', lifting-bars S, with cam-bearing S', and the hand-lever K, with cam-studs K³ K⁴, substantially as and for the purpose set forth.
3. The combination of the head P, with cam-bearings P' and P², the head S', with cam-bearing S², and the hand-lever K, with cam-studs K³ K⁴, and cam-bar K⁶, substantially as and for the purpose set forth.
4. The combination, with the fulcrum-pin K' of the hand-lever K, and the heads P and S', connected to the gripping-jaws, of the eccentric pin-bearing U, substantially as and for the purpose set forth.
5. The body C of the cable-grip, secured to

the body of the car by radius-rods and cross-bars, substantially as and for the purpose set forth.

5 6. The combination, with the body C of a cable-grip, of the pivoted cross-bars E, radius-rods G, and wheels D, running on cross rails or timbers B, substantially as and for the purpose set forth.

10 7. The combination, with the timbers B, extending in a direction transverse to the length of the car, of a grip resting thereon through the intervention of rollers, substantially as set forth.

15 8. The combination, with the grip and means for supporting it, of a system of jointed levers connecting it to the car, whereby it is restrained against motion in the direction of the length of the car, but permitted free motion in a horizontal plane in a direction transverse to
20 the length of the car, substantially as set forth.

25 9. The combination, with a grip, of a cam by which it is supported and a lever for moving said cam and thereby raising or lowering the grip for clearing cross-cables, &c., substantially as set forth.

10. The combination, with the jaws and

shank of the grip, of the operating-lever, the pin upon which said lever moves, the eccentric supporting said pin, a lever for turning said eccentric, and a bearing for the eccentric, 30 substantially as and for the purposes set forth.

11. The combination, with the two jaws of a grip, of movable slides to which they are respectively secured, and an operating-lever engaging the respective slides upon opposite 35 sides of its fulcrum, whereby they are moved simultaneously in opposite directions, substantially as set forth.

12. The combination, with the movable jaw of a grip and a slide to which it is secured, 40 having a cam, of an operating-lever having a projection for engaging said cam and moving the slide in one direction, and a second projection for engaging said slide and moving it in the opposite direction after the projection 45 first named is carried beyond the cam by a continued movement of the lever in one direction, substantially as set forth.

RICHARD P. WALSH.

Witnesses:

SAML. KNIGHT,

EDW. S. KNIGHT.